IN THE CLAIMS

Please amend the claims as follows:

1-2. (Cancelled).

3. (Currently Amended) ~~Method according to claim 2~~A method for reducing the number of bits of a digital input signal, said method comprising the steps of:

adding a pseudo-random noise signal to the digital input signal to form an intermediate signal, the pseudo-random noise signal being defined by noise parameters; and

quantizing the intermediate signal having a word length of n bits to a reduced word-length signal having a word length of m bits, where n and m are integers, n being larger than or equal to m, the quantizing of the intermediate signal including a first transfer function which is non-linear, the first transfer function being defined by non-linear device parameters, a quantization step of the first transfer function for small amplitudes being smaller than a quantization step for large amplitudes, ~~in which~~ wherein the gain of the first transfer function is substantially equal to one for small amplitudes, and ~~in which~~wherein the gain decreases for large amplitudes.

4. (Currently Amended) ~~Method according to~~ The method as claimed in claim 3, ~~in which~~wherein the first transfer function equals ~~the function~~:

$$M_e/D_i = c_1 \tanh(c_2 D_i + c_3),$$

in which M_e is the reduced ~~word~~ word-length signal, D_i is the intermediate signal, and c_1, c_2, c_3 are the non-linear device parameters ~~(NLD_p)~~.

5. (Currently Amended) ~~Method according to~~ The method as claimed in claim ~~1~~3, ~~in which~~wherein the amplitude of the noise signal ~~(N_a)~~ is at least equal to a predetermined noise value.

6. (Cancelled).

7. (Currently Amended) ~~Method according to claim 1~~A method for reducing the number of bits of a digital input signal, said method comprising the steps of:

adding a pseudo-random noise signal to the digital input signal to form an intermediate signal, the pseudo-random noise signal being defined by noise parameters; and

quantizing the intermediate signal having a word length of n bits to a reduced word-length signal having a word length of m bits, where n and m are integers, n being larger than or equal to

m, the quantizing of the intermediate signal including a first transfer function which is non-linear, the first transfer function being defined by non-linear device parameters, ~~in which~~wherein said method further comprises the step of:

recording the reduced ~~word~~ word-length signal ~~(M_e)~~, the non-linear device parameters ~~(NLD_p) and/or~~ and the noise parameters ~~(N_p) are recorded~~ on a recording medium ~~(13)~~.

8. (Currently Amended) ~~Method according to~~ The method as claimed in claim 7, in which the recording medium ~~(13)~~ is a compact disc and the reduced ~~word~~ word-length signal ~~(M_e)~~ is recorded on a first channel, and the non-linear device parameters ~~(NLD_p) and/or~~and the noise parameters ~~(N_p)~~ are recorded on a second channel, the first channel and second channel being separate channels.

9. (Currently Amended) ~~Method according to claim 1~~A method for reducing the number of bits of a digital input signal, said method comprising the steps of:

adding a pseudo-random noise signal to the digital input signal to form an intermediate signal, the pseudo-random noise signal being defined by noise parameters; and

quantizing the intermediate signal having a word length of n bits to a reduced word-length signal having a word length of m bits, where n and m are integers, n being larger than or equal to m, the quantizing of the intermediate signal including a first transfer function which is non-linear, the first transfer function being defined by non-linear device parameters, ~~comprising the further~~

wherein said method further comprises the steps of ~~providing~~:

forming a difference signal, the difference signal being equal to the intermediate signal ~~(D_i)~~ minus the reduced ~~word~~ word-length signal ~~(M_e)~~; and

recording the difference signal, the non-linear device parameters and the noise parameters on a recording medium.

10-11. (Cancelled).

12. Currently Amended) ~~Signal~~ A signal processing apparatus~~,~~ comprising:

a pseudo-random noise generator ~~(12)~~ for generating a noise signal ~~(Na) being~~ defined by noise parameters~~,~~ ;

an addition element ~~(11)~~ connected to the pseudo-random noise generator ~~(12)~~ for adding the noise signal ~~(N_a)~~ to ~~an~~ a

digital input signal ~~(M_i) to provide~~thereby forming an intermediate signal~~(D_i),~~; and

a first ~~quantising~~ quantizing element ~~(10)~~ connected to the addition element for transforming the intermediate signal~~(Di)~~, having a word length of n bits into a reduced ~~word~~ word-length signal having a word length of m bits, n and m being integers and n being larger than or equal to m, wherein,

the ~~quantising~~ quantizing element ~~(10)~~ has a non-linear transfer function, the non-linear transfer function being defined by non-linear device parameters~~(NLDp)~~, and wherein

a quantization step of the non-linear transfer function for small amplitudes being smaller than a quantization step for large amplitudes, the gain of the non-linear transfer function being substantially equal to one for small amplitudes, and the gain decreasing for large amplitudes.

13. (Cancelled).

14. (Cancelled).

15. (Currently Amended) ~~Signal~~ A signal decoding apparatus ~~according to claim 14~~for recovering an output signal from a reduced word-length signal recorded on a record carrier, said record carrier also having recorded thereon non-linear device parameters

and noise parameters used to generate the reduced word-length signal from an input signal, said signal decoding apparatus comprises:

means for extracting the reduced word-length signal, the non-linear device parameters and the noise parameters from the record carrier;

a quantization element coupled to said extracting means for processing said reduced word-length signal using a non-linear transfer function to form a decoded signal, said quantization element having a control input for receiving said non-linear device parameters for adjusting said non-linear transfer function to be inverse to a non-linear transfer function used to form said reduced word-length signal;~~, further comprising~~

a ~~second~~ noise source ~~(16)~~ for providing a subtraction noise signal ~~(N_s) to a subtraction element (15),~~, said noise source having a control input for receiving said noise parameters for adjusting the subtraction noise signal ~~(N_s) being~~to substantially equal to ~~the~~ a noise signal ~~(N_a)~~used in forming said reduced word-length signal; and~~, the~~

a subtraction element ~~(15) being arranged~~ for subtracting the subtraction noise signal ~~(N_s)~~ from the decoded signal ~~(M_d) in order~~ to ~~provide~~ form the output signal, whereby the output signal corresponds to the input signal.

16. (Currently Amended) ~~Signal~~ A signal processing apparatus~~,~~ comprising:

means for adding a pseudo-random noise signal to ~~the~~ a digital input signal ~~(M_i)~~ to obtain an intermediate signal, the pseudo-random noise signal being defined by noise parameters; and

means for ~~quantising~~ quantizing the intermediate signal, having a word length of n bits, to a reduced ~~word~~ word-length signal having a word length of m bits, n and m being integers and n being larger than or equal to m, wherein

the ~~quantising~~ quantizing means includes a first transfer function which is non-linear, the first transfer function being defined by non-linear device parameters, and wherein

a quantization step of the first transfer function for small amplitudes being smaller than a quantization step for large amplitudes, the gain of the first transfer function being substantially equal to one for small amplitudes, and wherein the gain decreases for large amplitudes.